

REMARKS

Claims 1-48 are currently pending in the application. New claims 49 and 50 have been added and no new matter has been added. Claims 1-27 have been withdrawn from consideration.

35 U.S.C. section 112

Claim 37 stands rejected under 35 U.S.C. section 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner specifically noted that there is no antecedent basis for "the tungsten films." The Applicants thank the Examiner for pointing this out and have amended the claim to recite that the secondary films have a greater thickness than the "primary films." The Applicants point out that this amendment does not narrow the scope of the claim but instead provides the claim with the breadth to which it is entitled.

The Examiner has also stated that claim 37 would be allowable if rewritten to overcome the rejection and to include all of the limitations of the base claim and any intervening claims. The Applicants respectfully thank the Examiner. In light of Applicants position that claim 28 is allowable, which is outlined below, the Applicants have decided to refrain from rewriting this claim as an independent claim at this time, without prejudice to amending it at some later time.

35 U.S.C. section 102

Claims 28, 29 and 32 stand rejected under 35 U.S.C. section 102(b) as anticipated by U.S. Patent No. 4,619,865 to Keem ("Keem et al."). The Applicant respectfully traverse this rejection.

The present invention relates to a method of making an alloy having high strength. The method comprises the steps of depositing a primary film of a Group VIB transition metal, thereafter depositing an adherent film of a metal or semi-metal

compound having a crystal habit different from the body-centered-cubic habit of the first film and having a limited solubility or reactivity with respect to said body-centered-cubic metal at the deposition and use temperatures of the alloy. The thickness of the second film is sufficient to arrest the epitaxial growth between adjacent primary films. The alternate deposition of the Group VIB metal and the second metal or semi-metal film can be repeated until the required thickness is reached.

Keem et al. discloses multilayer coatings applied over a substrate. The Examiner has stated that Keem et al. discloses materials that include Group VI refractory metals or metal compounds such as tungsten carbide and that the layers may have a thickness within the scope of, for example, claim 29. The Examiner further draws attention to the specification of Keem et al. (column 3, lines 52-62) and the Examiner characterizes Keem et al. as stating that prior art structures lack extended planes through which fractures can propagate. The Examiner contends that this is in accordance with lines 9-11 of claim 28. The Applicants respectfully assert that the Examiner has misconstrued either Keem et al. or claim 28, or both.

Lines 9-11 of claim 28 recite that the thickness of the deposited film of the metal or semi-metal compound arrests crystallite growth and prevents epitaxial growth between adjoining primary microcrystalline films. The Applicants have discovered that arresting crystallite growth between adjacent layers helps result in a very strong alloy. Keem et al. states that "disordered materials may lack extended lattice planes through which fractures can propagate" (column 3, lines 59-62). However, Keem et al. does not disclose or suggest methods of making strong alloys. Nor does Keem et al. disclose or suggest arresting crystallite growth between adjoining layers in order to help provide such strength. Thus, Keem et al. clearly does not teach or suggest arresting crystallite growth to help provide strength to an alloy. For the foregoing reasons, independent claim 28 and dependent claims 29 and 32 are patentably distinct from Keem et al.

35 U.S.C. section 103

Claims 30, 31, and 33 stand rejected under 35 U.S.C. section 103(a) as being unpatentable over Keem et al. The Applicant respectfully traverse this rejection.

As discussed above, Keem et al. does not teach or suggest arresting crystallite growth in order to provide strength to an alloy. It follows, therefore, that Keem et al. cannot render the present invention of claims 28-34 unpatentable. Hence, claims 30, 31, and 33 are patentably distinct from Keem et al.

Claims 28, 29, and 30 stand rejected under 35 U.S.C. section 103(a) as being unpatentable over U.S. Patent No. 5,535,816 ("Hashimoto et al.") The Applicant respectfully traverse this rejection.

Hashimoto et al. discloses chemical vapor deposition of layers which may comprise, e.g. chromium and a chromium compound. The Examiner has asserted that Hashimoto et al. does not specify repeating an alternate deposition of the two layers. It follows, therefore, that Hashimoto et al. does not teach or suggest arresting crystallite growth between adjoining primary microcrystalline films in order to help provide strength to an alloy. Thus, Hashimoto et al. cannot anticipate or render obvious the invention of claim 28, nor claims 29 and 30 which are dependent therefrom, and these claims are thus patentable over Hashimoto et al.

Claims 28, 30, 31 and 32 stand rejected under 35 U.S.C. section 103(a) as being unpatentable over U.S. Patent No. 4,855,188 ("Garg et al."). The Applicant respectfully traverse this rejection.

Garg et al. discloses chemical vapor deposition of films of tungsten and tungsten carbide upon a substrate. The Examiner again asserts that the reference does not specify repeating an alternate deposition of the metal and carbide layers. Applicant again asserts that the reference thus does not teach or suggest arresting crystallite growth between adjoining primary microcrystalline films. Furthermore, Garg et al. does

not teach or suggest a method of making a strong alloy. Thus, Garg et al. does not teach or suggest arresting crystallite growth between adjoining microcrystalline films in order to help provide strength to an alloy. For the foregoing reasons, Garg et al. does not anticipate or render obvious the invention of claim 28, nor claims 30, 31 and 32 which are dependent therefrom, and these claims are thus patentable over Garg et al.

Claim Objections

Claim 34 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Applicants respectfully thank the Examiner. In light of Applicants position that claim 28 is allowable, which is outlined below, the Applicants have decided to refrain from amending this claim at this time, without prejudice to amending it at some later time.

Allowable Claims

The Examiner has stated that claims 35, 36, and 38-48 are allowable over the prior art of record. The Applicants respectfully thank the Examiner.

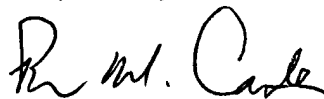
Claims 49 and 50 have been added and no new matter has been added. Applicant asserts that claims 49 and 50 are allowable over the cited references for the same reasons as outlined above with respect to claim 28.

In view of the foregoing, Applicant believes the pending claims to be in condition of allowance. Reconsideration and early allowance are respectfully and sincerely requested.

The Commissioner is hereby authorized to charge for any additional filing fees or credit any overpayment to Deposit Account No. 50-1329. A duplicate copy of this sheet is attached.

Respectfully submitted,

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